

# Home Computing WEEKLY

An Apple Computer Publication

Only WEEKLY software magazine like no other

No. 45  
Jan 17-23, 1984

40p

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time

3D shapes on VIC

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for: Spectrum,  
Dragon, Texas

new Spectrum  
Adventure

Spectrum Safari



LEO Micro Systems  
10 Woodfield Close, Farnham,  
Surrey GU10 2PL

FIRST  
REPORT

FIRST  
REPORTS

FIRST  
REPORTS

New micros  
from Sinclair  
and Oric.

All the details,  
plus pictures

## Digger v. the aliens

Programmer American GridLife  
got behind the wheel of a TV-run  
miniseries — to help win a  
computer game

The result is a tape called *TV  
Digger* — the cut for the BBC  
model is much better so write  
to: American

Playtex are an aerial view of a  
digger — in 3D yellow with  
black tyres, red wheel hubs and  
white scoop. The aim is to dig a  
hole into the ground surface, or  
vice versa, as alien is falling and  
then use the bucket to refill the  
hole.

Talk between J C Banerjee,  
the head of the board games  
and American begins one ago  
for GridLife, 11, again one

Continued on page 8

## TED arrives in spring

Commodore is to launch a new  
home computer line in April  
Endowment, TED, is said to  
be available as the Commodore 64  
at a US price of \$200

Although the final design for  
the UK has not been decided, it  
will have a brand new BASIC

The main line Commodore is  
breaking new to small players of  
answering that new computers are  
compatible with earlier models

The new language is called  
BASIC-64 and is an enhanced  
version of the BASIC used on the  
company's business machines

Commodore's UK marketing

Continued on page 8

## new Spectrum Arcade action

Magic Warriors



LEO Micro Systems  
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# SPECTRUM JOYSTICK INTERFACE

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COMPUTER



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01-477 1002 NOW!

## Briefly

Acorn has brought out a dual format drive system allowing floppy disks to be read in both 40 and 80 track drives. All Acorn soft's new disc boundaries will be in the dual format, and disks being sold as standard duals will be made available, so dual format formats have been cleared. However, duals will use the same, as the single format does, 5.25 floppy.

Commodore 4p Alphas and Commodore CBT 242

\*\*\*

AVT have launched a new computer workstation called Proton 1. It's a workstation disk with a VDU support that provides space for disk drives. The VDU can be placed on either left or right hand of the disk support or two positions above the frame edge. The unit comes packed flat for convenience.

Price £48

APC Ocean Server, Western Kingston

\*\*\*

VIC-20 operating System, are now running into Commodore 64 software with Gridwrap 64, support for dual 16, all leading to 256 Commodore 64, and as early time for the VIC-20 High Score Competition. 642 prize is Commodore 64, drive, second prize is Commodore 1200 colour printer system, third prize is a 1600KB BASIC printer and several suggestions for the VIC-20 competition prizes.

Samtick, Royal London House, 174 Chancery, Aldgate E1 6JL

\*\*\*

Alan Pinner has selected the best of his All-Star programs which have enabled him to win the 1983-84 All-Star award. He is 39.5. This, Alan says, is because he didn't have to worry as much when taking on the best players for the first season.

Alan Pinner, 100 Mary Hill, London SE15 6LE

# Home Computing WEEKLY

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Is An  
**URBAN  
UPSTART**  
Are You?

ULTIMATE LIMITED SOFTWARE



There's eight pages of software reviews on this issue — that's 40 programs rated by our panel, more than any other magazine.



Team to the competition on page 5. There's 200 chances to win a share of £1,000 worth of power from Vortex Software.



We hope a major series on page 21 which will give you Extended BASIC as your Commodore 64. To be in this week's listings and our theme straight away. And make sure you get the best for a series.

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**LUNAR JETMAN** - 15,495.25  
Spectrum  
Lunar Jetman is a fast-paced  
action game that will keep you  
on the edge of your seat.

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**LUNAR JETMAN** - 15,495.25  
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**ATIC ATAC** - 15,495.25 Spectrum

**COOKIE** - 15,495.25  
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**TAPAS** - 15,495.25 Spectrum

**ATIC ATAC** - 15,495.25 Spectrum  
ATIC ATAC is a fast-paced  
action game that will keep you  
on the edge of your seat.

...and more...  
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...and more...

...and more...  
...and more...  
...and more...  
...and more...  
...and more...







# MOGUL

## THE HOTWARE PEOPLE



### METAMORPHOSIS

Metamorphosis takes you on a tour of the Cybernetic World, a place where the boundaries between the physical and the digital are blurred. You'll meet the most powerful and dangerous of the Cybernetic World's creatures, the Cybernetic Warriors, and you'll see how they use their powers to conquer the world.



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## Spot the differences

**You've got 200 chances to win Vortex games — and all you have to do is spot the differences. The tapes are waiting to be sent to the winners, so send us your entry as soon as you can.**



win  
great  
games  
from

local issues, and their role in the  
national political process.

Both guests have had various national projects. Overland on my radio station, interned books and delivered food boxes, and the system

Figure 1 consists of four bar charts, (a) through (d), showing the percentage of respondents for each age group across different demographic categories. The age groups on the x-axis are 18-24, 25-34, 35-44, 45-54, 55-64, and 65+. The y-axis represents the percentage from 0 to 100.

(a) Gender: The percentage of respondents for each gender across age groups. The bars are labeled with their respective percentages.

Age Group	Male (%)	Female (%)
18-24	52	48
25-34	50	50
35-44	48	52
45-54	45	55
55-64	42	58
65+	40	60

(b) Education: The percentage of respondents for each education level across age groups. The bars are labeled with their respective percentages.

Age Group	High School (%)	College (%)	Postgraduate (%)
18-24	15	45	40
25-34	12	48	40
35-44	10	50	40
45-54	8	52	40
55-64	5	55	40
65+	3	58	39

(c) Income: The percentage of respondents for each income level across age groups. The bars are labeled with their respective percentages.

Age Group	Low Income (%)	Medium Income (%)	High Income (%)
18-24	35	45	20
25-34	30	48	22
35-44	25	50	25
45-54	20	52	28
55-64	15	55	30
65+	10	58	32

(d) Employment: The percentage of respondents for each employment status across age groups. The bars are labeled with their respective percentages.

Age Group	Unemployed (%)	Part-time (%)	Full-time (%)
18-24	25	35	40
25-34	20	38	42
35-44	15	40	45
45-54	10	42	48
55-64	8	45	47
65+	5	48	47

Finally, the 1990s witnessed a major shift in the composition of the American foreign aid portfolio. In the early 1990s, the aid portfolio was dominated by military aid — at least 50 percent — and

Then fill in your name, title, address and the number of old foreigner visa issued.

Call us today for savings, too, and the 20 savings with no-credit-records, low on our savings — and we're already on the track of other people's financial differences you found.

Find your way to Henry's Lane  
between Howard University and  
the National Mall. London, N.W.

Andrew, chief of first year and Friday February 3. His answers to both papers will be the first in several months deposited at various. And the next 170 answers referring to student and general will be for students of the year 1911.

There are many other reasons why you should not use a computer. For example, you will not be able to use a computer if you do not have a computer. You will not be able to use a computer if you do not have a computer. You will not be able to use a computer if you do not have a computer.

The contents include names of the winners will be published in the next issues of *Energy Engineering*. ENEE and the prizes will award the winners within 30 days of the publication date of this issue.

[illegible]

Students will not be required to complete all of these activities. Please see the Student Handbook and syllabus for more information. This information will be updated as needed.

to the company's 1995 revenue of \$1.1 billion, up from \$900 million in 1994. The company's revenue is expected to reach \$1.5 billion in 1996.

**Wiederholungsfragen:** [Wiederholungsfragen](#)

Age Group	Total (%)	Male (%)	Female (%)	Unknown (%)
18-24	15	10	20	5
25-34	25	15	35	10
35-44	35	25	45	20
45-54	45	35	55	30
55-64	55	45	65	40
65+	65	55	75	50




11. *Journal of the American Medical Association*, 2000; 283: 2686-2692.

**Abstract**

1. **Introduction**

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SCOPE is a fully structured  
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comprehend and is very powerful  
indeed providing many features  
not available from BASIC.

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TO BE BELIEVED**

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Welcome





# Put your finger on the action

Five games for fast movers, speed-tested by our review panel

## Heist \$2K BBC £5.95

Your task was simple: up and down ladders in an attempt to rob bags of money without getting caught by enemy bank robbers.

The game is very good and has the playing for hours. The movements were good on the screen, there was some really fast action.

The bank manager has a coffee on the top of money without being killed by four bank robbers which he has to do before — the robbery bank manager.

The graphics and sound are both very good. You can see the money on the top of the bank and you can see the money on the top of the bank.

The only thing I found very

## Postman's Knock Ti-99/4A £4.95

Lord County 14 Shipwood, Brackley, Oxford

The documentation for this odd game is quite detailed, if mainly to remind the user of the rules of the game. It is a very good game and has the playing for hours.

The graphics and sound are both very good. You can see the money on the top of the bank and you can see the money on the top of the bank.

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## Dracula's Revenge 48K Cric £5.95

Softlab, 12-13 Mansour Street, Covent Garden, London WC2

Dracula's Revenge is a very good game and has the playing for hours. The movements were good on the screen, there was some really fast action.

The graphics and sound are both very good. You can see the money on the top of the bank and you can see the money on the top of the bank.

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good game. I like the feature provided which allows continuous practice without losing your first score. It is a very good game and has the playing for hours. The movements were good on the screen, there was some really fast action.

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## Robot Riot 48K Spectrum £5.95

Malvern 24 Apple Computer, Malvern, Worcestershire

The graphics and sound are both very good. You can see the money on the top of the bank and you can see the money on the top of the bank.

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## Shear Panic Spectrum £5.95

Winnert, 1, Farnham Road, Bedford St, London, W1

The graphics and sound are both very good. You can see the money on the top of the bank and you can see the money on the top of the bank.

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## SITUATIONS AVAILABLE AT

**IMAGINE SOFTWARE LTD** is the largest and most successful game software house outside of the U.S.A. with more than 100 staff occupying 19,000 square feet of premises throughout Liverpool. Imagine Software are at the forefront of today's exciting software industry. As a result of Imagine's advanced and imaginative expansion program the following positions have become available. In all cases remuneration is commensurate with ability and seniority and is above industry standards. In many cases a new car and numerous fringe benefits will be part of the package. Relocation assistance will be given to successful candidates wherever needed.

### SENIOR SOFTWARE MANAGER

A position exists for a Senior Manager who will be responsible for several departments working in diverse areas of software design and production. Applicants must have proven experience in continuously orientated software environments and a wide range of technical knowledge and skills.

This is a very senior position with many exciting and rewarding aspects. Career prospects are excellent.

### SOFTWARE MANAGERS

Two positions exist to manage large software departments at the forefront of the games industry. Applicants must have a proven knowledge and interest in computer games. A wide range of software skills and experience in managing programming staff.

### SOFTWARE ARTISTS/GAMES PROGRAMMERS

Eight positions are available for programmers with suitable technical ability, creative skills needed to write and code best selling games.

Fluency in at least one assembly language, artistic ability plus proven experience are the necessary qualifications. The successful applicants will be working in an innovative environment with the best available development software and equipment and will be provided with a high level of technical back up. This is the ultimate career opening for games programmers.

### SYSTEMS SOFTWARE PROGRAMMERS

Two positions exist for systems software programmers working on very advanced products. Both positions are exciting and innovative. For the first, applicants must be fluent in the 'C' language and MC68000 environment and be familiar with first type operating systems.

Applicants must be able to demonstrate a wide knowledge of advanced development tools.

The second position requires fluency in Pascal and MC68000 assembler and familiarity with the VMS operating system.

Experience of computer graphics and general business oriented applications software will be an advantage.

### PROGRAMMERS

Three positions exist for programmers working in a team environment on every diverse aspect of microcomputer software including the conversion and adaptation of games to new microcomputers.

Applicants should be fluent in at least one assembly language and have good familiarity with at least one currently popular consumer microcomputer. Experience in microcomputer hardware is a qualifying factor.

### GRAPHICS PROGRAMMERS

Two positions are available for programmers with skills, experience and knowledge of microcomputer graphics as applied to games software.

Applicants must be fluent in at least one popular microcomputer assembly language and preferably have a working knowledge of one other plus familiarity with currently available microcomputer capability. Proven experience and/or ability essential.

### COMPUTER MUSICIANS

Two openings are available for programmers who have the ability to write music and sound effects for popular micro. The applicants must have a good knowledge of an assembly language and proven musical skills.

### GAME DESIGNERS

Two positions exist for game designers to design a wide variety of entertainment software. Applicants will have both experience in general games design and theory plus a working knowledge of microcomputers.

### TECHNICAL WRITER

An opening exists for a technical writer to prepare software manuals for both commercial products and internal development tools. A recognized writing qualification will be necessary for applicants as will a very wide working knowledge of microcomputers.

### GRAPHIC ARTISTS

There are six positions available for artists working on games design and production using computer based graphic tools. A knowledge of microcomputer graphics plus excellent artistic skills are the qualifications for these positions.

Applicants should in the first instance send their CV to:  
**PERSONNEL DEPARTMENT, IMAGINE SOFTWARE LIMITED**  
**IMAGINE HOUSE, 5 SIR THOMAS STREET, LIVERPOOL L1 6BW**  
or ask for an application form - 051-236 8100 (20 lines)





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[illegible][illegible]

11. The author's attitude toward the "new" is best described as

Readers are encouraged to visit the [www.elsevier.com/locate/journal](http://www.elsevier.com/locate/locate/journal) website for more information on the journal and its content.





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The joystick cable is connected to the joystick cable ( joystick cable ) and to the joystick cable ( joystick cable )

The joystick is connected to the joystick cable ( joystick cable ) and to the joystick cable ( joystick cable )

Once installed the joystick can be used as a joystick cable ( joystick cable ) and to the joystick cable ( joystick cable )



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5768 000773.51 3.200 3.200.0  
5769 000774.51 3.200 3.200.0  
5770 000775.51 3.200 3.200.0  
5771 000776.51 3.200 3.200.0  
5772 000777.51 3.200 3.200.0  
5773 000778.51 3.200 3.200.0  
5774 000779.51 3.200 3.200.0  
5775 000780.51 3.200 3.200.0  
5776 000781.51 3.200 3.200.0  
5777 000782.51 3.200 3.200.0  
5778 000783.51 3.200 3.200.0  
5779 000784.51 3.200 3.200.0  
5780 000785.51 3.200 3.200.0  
5781 000786.51 3.200 3.200.0  
5782 000787.51 3.200 3.200.0  
5783 000788.51 3.200 3.200.0  
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5786 000791.51 3.200 3.200.0  
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5795 000800.51 3.200 3.200.0  
5796 000801.51 3.200 3.200.0  
5797 000802.51 3.200 3.200.0  
5798 000803.51 3.200 3.200.0  
5799 000804.51 3.200 3.200.0  
5800 000805.51 3.200 3.200.0  
5801 000806.51 3.200 3.200.0  
5802 000807.51 3.200 3.200.0  
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5804 000809.51 3.200 3.200.0  
5805 000810.51 3.200 3.200.0  
5806 000811.51 3.200 3.200.0  
5807 000812.51 3.200 3.200.0  
5808 000813.51 3.200 3.200.0  
5809 000814.51 3.200 3.200.0  
5810 000815.51 3.200 3.200.0  
5811 000816.51 3.200 3.200.0  
5812 000817.51 3.200 3.200.0  
5813 000818.51 3.200 3.200.0  
5814 000819.51 3.200 3.200.0  
5815 000820.51 3.200 3.200.0  
5816 000821.51 3.200 3.200.0  
5817 000822.51 3.200 3.200.0  
5818 000823.51 3.200 3.200.0  
5819 000824.51 3.200 3.200.0  
5820 000825.51 3.200 3.200.0  
5821 000826.51 3.200 3.200.0  
5822 000827.51 3.200 3.200.0  
5823 000828.51 3.200 3.200.0  
5824 000829.51 3.200 3.200.0  
5825 000830.51 3.200 3.200.0  
5826 000831.51 3.200 3.200.0  
5827 000832.51 3.200 3.200.0  
5828 000833.51 3.200 3.200.0  
5829 000834.51 3.200 3.200.0  
5830 000835.51 3.200 3.200.0  
5831 000836.51 3.200 3.200.0  
5832 000837.51 3.200 3.200.0  
5833 000838.51 3.200 3.200.0  
5834 000839.51 3.200 3.200.0  
5835 000840.51 3.200 3.200.0  
5836 000841.51 3.200 3.200.0  
5837 000842.51 3.200 3.200.0  
5838 000843.51 3.200 3.200.0  
5839 000844.51 3.200 3.200.0  
5840 000845.51 3.200 3.200.0  
5841 000846.51 3.200 3.200.0  
5842 000847.51 3.200 3.200.0  
5843 000848.51 3.200 3.200.0  
5844 000849.51 3.200 3.200.0  
5845 000850.51 3.200 3.200.0  
5846 000851.51

Program 2 — the BASIC program, Type NEW after entering Program 1, then key in Program 1, SetNL, the NLN

```

3 Airt-DEMISTRATION PROGRAM#
10 P=0.0000
15 REMOTE INTO MODE#
20 FOR I=24 TO 32 FOR J=1 TO 32 FOR K=17 TO 32
25 A=0.0000
30 FOR L=0 TO 32
35 FOR M=0 TO 32
40 FOR N=0 TO 32
50 FOR O=0 TO 32
60 FOR P=0 TO 32
70 FOR Q=0 TO 32
80 FOR R=0 TO 32
90 FOR S=0 TO 32
100 FOR T=0 TO 32
110 FOR U=0 TO 32
120 FOR V=0 TO 32
130 FOR W=0 TO 32
140 FOR X=0 TO 32
150 FOR Y=0 TO 32
160 FOR Z=0 TO 32
170 FOR AA=0 TO 32
180 FOR AB=0 TO 32
190 FOR AC=0 TO 32
200 FOR AD=0 TO 32
210 FOR AE=0 TO 32
220 FOR AF=0 TO 32
230 FOR AG=0 TO 32
240 FOR AH=0 TO 32
250 FOR AI=0 TO 32
260 FOR AJ=0 TO 32
270 FOR AK=0 TO 32
280 FOR AL=0 TO 32
290 FOR AM=0 TO 32
300 FOR AN=0 TO 32
310 FOR AO=0 TO 32
320 FOR AP=0 TO 32
330 FOR AQ=0 TO 32
340 FOR AR=0 TO 32
350 FOR AS=0 TO 32
360 FOR AT=0 TO 32
370 FOR AU=0 TO 32
380 FOR AV=0 TO 32
390 FOR AW=0 TO 32
400 FOR AX=0 TO 32
410 FOR AY=0 TO 32
420 FOR AZ=0 TO 32
430 FOR BA=0 TO 32
440 FOR BB=0 TO 32
450 FOR BC=0 TO 32
460 FOR BD=0 TO 32
470 FOR BE=0 TO 32
480 FOR BF=0 TO 32
490 FOR BG=0 TO 32
500 FOR BH=0 TO 32
510 FOR BI=0 TO 32
520 FOR BJ=0 TO 32
530 FOR BK=0 TO 32
540 FOR BL=0 TO 32
550 FOR BM=0 TO 32
560 FOR BN=0 TO 32
570 FOR BO=0 TO 32
580 FOR BP=0 TO 32
590 FOR BQ=0 TO 32
600 FOR BR=0 TO 32
610 FOR BS=0 TO 32
620 FOR BT=0 TO 32
630 FOR BU=0 TO 32
640 FOR BV=0 TO 32
650 FOR BW=0 TO 32
660 FOR BX=0 TO 32
670 FOR BY=0 TO 32
680 FOR BZ=0 TO 32
690 FOR CA=0 TO 32
700 FOR CB=0 TO 32
710 FOR CC=0 TO 32
720 FOR CD=0 TO 32
730 FOR CE=0 TO 32
740 FOR CF=0 TO 32
750 FOR CG=0 TO 32
760 FOR CH=0 TO 32
770 FOR CI=0 TO 32
780 FOR CJ=0 TO 32
790 FOR CK=0 TO 32
800 FOR CL=0 TO 32
810 FOR CM=0 TO 32
820 FOR CN=0 TO 32
830 FOR CO=0 TO 32
840 FOR CP=0 TO 32
850 FOR CQ=0 TO 32
860 FOR CR=0 TO 32
870 FOR CS=0 TO 32
880 FOR CT=0 TO 32
890 FOR CU=0 TO 32
900 FOR CV=0 TO 32
910 FOR CW=0 TO 32
920 FOR CX=0 TO 32
930 FOR CY=0 TO 32
940 FOR CZ=0 TO 32
950 FOR DA=0 TO 32
960 FOR DB=0 TO 32
970 FOR DC=0 TO 32
980 FOR DD=0 TO 32
990 FOR DE=0 TO 32
1000 FOR DF=0 TO 32
1010 FOR DG=0 TO 32
1020 FOR DH=0 TO 32
1030 FOR DI=0 TO 32
1040 FOR DJ=0 TO 32
1050 FOR DK=0 TO 32
1060 FOR DL=0 TO 32
1070 FOR DM=0 TO 32
1080 FOR DN=0 TO 32
1090 FOR DO=0 TO 32
1100 FOR DP=0 TO 32
1110 FOR DQ=0 TO 32
1120 FOR DR=0 TO 32
1130 FOR DS=0 TO 32
1140 FOR DT=0 TO 32
1150 FOR DU=0 TO 32
1160 FOR DV=0 TO 32
1170 FOR DW=0 TO 32
1180 FOR DX=0 TO 32
1190 FOR DY=0 TO 32
1200 FOR DZ=0 TO 32
1210 FOR EA=0 TO 32
1220 FOR EB=0 TO 32
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1240 FOR ED=0 TO 32
1250 FOR EE=0 TO 32
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1280 FOR EH=0 TO 32
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1300 FOR EJ=0 TO 32
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1320 FOR EL=0 TO 32
1330 FOR EM=0 TO 32
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1350 FOR EO=0 TO 32
1360 FOR EP=0 TO 32
1370 FOR EQ=0 TO 32
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1390 FOR ES=0 TO 32
1400 FOR ET=0 TO 32
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1660 FOR FT=0 TO 32
1670 FOR FU=0 TO 32
1680 FOR FV=0 TO 32
1690 FOR FW=0 TO 32
1700 FOR FX=0 TO 32
1710 FOR FY=0 TO 32
1720 FOR FZ=0 TO 32
1730 FOR GA=0 TO 32
1740 FOR GB=0 TO 32
1750 FOR GC=0 TO 32
1760 FOR GD=0 TO 32
1770 FOR GE=0 TO 32
1780 FOR GF=0 TO 32
1790 FOR GG=0 TO 32
1800 FOR GH=0 TO 32
1810 FOR GI=0 TO 32
1820 FOR GJ=0 TO 32
1830 FOR GK=0 TO 32
1840 FOR GL=0 TO 32
1850 FOR GM=0 TO 32
1860 FOR GN=0 TO 32
1870 FOR GO=0 TO 32
1880 FOR GP=0 TO 32
1890 FOR GQ=0 TO 32
1900 FOR GR=0 TO 32
1910 FOR GS=0 TO 32
1920 FOR GT=0 TO 32
1930 FOR GU=0 TO 32
1940 FOR GV=0 TO 32
1950 FOR GW=0 TO 32
1960 FOR GX=0 TO 32
1970 FOR GY=0 TO 32
1980 FOR GZ=0 TO 32
1990 FOR HA=0 TO 32
2000 FOR HB=0 TO 32
2010 FOR HC=0 TO 32
2020 FOR HD=0 TO 32
2030 FOR HE=0 TO 32
2040 FOR HF=0 TO 32
2050 FOR HG=0 TO 32
2060 FOR HH=0 TO 32
2070 FOR HI=0 TO 32
2080 FOR HJ=0 TO 32
2090 FOR HK=0 TO 32
2100 FOR HL=0 TO 32
2110 FOR HM=0 TO 32
2120 FOR HN=0 TO 32
2130 FOR HO=0 TO 32
2140 FOR HP=0 TO 32
2150 FOR HQ=0 TO 32
2160 FOR HR=0 TO 32
2170 FOR HS=0 TO 32
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2190 FOR HU=0 TO 32
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2220 FOR HX=0 TO 32
2230 FOR HY=0 TO 32
2240 FOR HZ=0 TO 32
2250 FOR IA=0 TO 32
2260 FOR IB=0 TO 32
2270 FOR IC=0 TO 32
2280 FOR ID=0 TO 32
2290 FOR IE=0 TO 32
2300 FOR IF=0 TO 32
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2320 FOR IH=0 TO 32
2330 FOR II=0 TO 32
2340 FOR IJ=0 TO 32
2350 FOR IK=0 TO 32
2360 FOR IL=0 TO 32
2370 FOR IM=0 TO 32
2380 FOR IN=0 TO 32
2390 FOR IO=0 TO 32
2400 FOR IP=0 TO 32
2410 FOR IQ=0 TO 32
2420 FOR IR=0 TO 32
2430 FOR IS=0 TO 32
2440 FOR IT=0 TO 32
2450 FOR IU=0 TO 32
2460 FOR IV=0 TO 32
2470 FOR IW=0 TO 32
2480 FOR IX=0 TO 32
2490 FOR IY=0 TO 32
2500 FOR IZ=0 TO 32
2510 FOR JA=0 TO 32
2520 FOR JB=0 TO 32
2530 FOR JC=0 TO 32
2540 FOR JD=0 TO 32
2550 FOR JE=0 TO 32
2560 FOR JF=0 TO 32
2570 FOR JG=0 TO 32
2580 FOR JH=0 TO 32
2590 FOR JI=0 TO 32
2600 FOR JJ=0 TO 32
2610 FOR JK=0 TO 32
2620 FOR JL=0 TO 32
2630 FOR JM=0 TO 32
2640 FOR JN=0 TO 32
2650 FOR JO=0 TO 32
2660 FOR JP=0 TO 32
2670 FOR JQ=0 TO 32
2680 FOR JR=0 TO 32
2690 FOR JS=0 TO 32
2700 FOR JT=0 TO 32
2710 FOR JU=0 TO 32
2720 FOR JV=0 TO 32
2730 FOR JW=0 TO 32
2740 FOR JX=0 TO 32
2750 FOR JY=0 TO 32
2760 FOR JZ=0 TO 32
2770 FOR KA=0 TO 32
2780 FOR KB=0 TO 32
2790 FOR KC=0 TO 32
2800 FOR KD=0 TO 32
2810 FOR KE=0 TO 32
2820 FOR KF=0 TO 32
2830 FOR KG=0 TO 32
2840 FOR KH=0 TO 32
2850 FOR KI=0 TO 32
2860 FOR KJ=0 TO 32
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2930 FOR KQ=0 TO 32
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2960 FOR KT=0 TO 32
2970 FOR KU=0 TO 32
2980 FOR KV=0 TO 32
2990 FOR KW=0 TO 32
3000 FOR KX=0 TO 32
3010 FOR KY=0 TO 32
3020 FOR KZ=0 TO 32
3030 FOR LA=0 TO 32
3040 FOR LB=0 TO 32
3050 FOR LC=0 TO 32
3060 FOR LD=0 TO 32
3070 FOR LE=0 TO 32
3080 FOR LF=0 TO 32
3090 FOR LG=0 TO 32
3100 FOR LH=0 TO 32
3110 FOR LI=0 TO 32
3120 FOR LJ=0 TO 32
3130 FOR LK=0 TO 32
3140 FOR LL=0 TO 32
3150 FOR LM=0 TO 32
3160 FOR LN=0 TO 32
31
```



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1000

## Geography and Spectrum

★★★★★

**As Simon Harrison, an investor in investment trusts, says:**

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Worcester WR5 3NR

## Where To

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These three powerful studies, you too can get a high-strength window on the real world.

One application of this would be to create multi-coloured characters, by putting the left-hand column values into

It's not a good idea to use the low-voltage currents like this, since the magnetic field strength can be so small.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

## Quadrability TI-99/4A ES

Robson Software, 12 Altona Road, Salford, Cheshire

Quadrability is a reproduction of the psychological gameboard Quadrability by the different versions.

You have to start in each of the four fields. From all, the defender is positioned, then the strength of the team is chosen and the ball is fired.

When the ball returns from the defender, a series of moves the moves and statistics are added where a hit. Each move consists of five stars and each star adds when the ball has the points of the score.

In game two, Colour Control, players of the same colour have to be taken together.

In the third game, I've built the ball has to be taken together. In the fourth, the defender is a combination of the first and the second, the only difference being that the first half is more serious. They just differ in the ball handling, which is the first.

A last three of the programs is a Memory game, which tests the player in play and a series of such variations.

The game is not really for those who play for money, but only for those who play for money. It is not really for those who play for money.

Quadrability  
Quadrability  
Quadrability  
Quadrability

★★★★

99%  
99%  
99%  
99%

# The perfect partner?

Do people laugh at you when you play snooker? Does your bridge game leave a little to be desired? Your micro can make a sympathetic partner — with the right software

## Knockout Spectrum 48K £5.95

Midway, 31 Agate Drive, Southall, York

Knockout is an extremely simple of chess bridge game, with all the good features of the original

game. The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

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game. The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

## Snooker 32K BBC £7.95

Playtex, 1 Fidelity Way, Southall, London W5

With the original Snooker program I've seen for the BBC, the only thing I can say is that it's a simple

There is no doubt that the game is a simple bridge game, with all the good features of the original

One advantage is that the game is a simple bridge game, with all the good features of the original

It also has a last half, which is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

There is no doubt that the game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

## Snooker COM-64 £8.95

Volant, 1 Fidelity Way, Southall, London W5

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

The game is a simple bridge game, with all the good features of the original

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The game is a simple bridge game, with all the good features of the original

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## Bridge Player 48K Spectrum £9.95

CR Software, 17 Deodar Lane, Farnham, Dorset BH14 9AA, Dorset

It's a simple game, but it's a simple game, with all the good features of the original

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Building a simple game, but it's a simple game, with all the good features of the original

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The game is a simple bridge game, with all the good features of the original





# Shapes you can see in 3D

You can create shapes on the screen and then see all three dimensions with J. D. Peel's program for the VIC-20 with Super Expander cartridge

How it works.  
 100-170 accepts data from key board regarding an definition of the shape. Group numbers 1-99  
 180-280 performs the calculations involved in setting up the three coordinates and determining the working area  
 300-400 sets a working area to maximize output data  
 410-500 shows the figure as it displayed on the screen in 3D mode  
 510-540 accepts three sequential angles of location in degrees and converts the data and redraws for the computer  
 560-600 shows the 3D representation that the representation has been drawn calculated by the calculations  
 610-630 sets the manual coordinates and shows the changes screen ready for manual redrawing through the working procedure  
 The three subroutines adjust the screen coordinates of the working panel. Each subprogram deals with rotation in a different plane

Although most people think of a plane as being a piece of plane or triangular piece within the computer meaning of the word is any object which is a plane which when remains constant through out its length

## How to use program

There are 3 subroutines of the VIC-20 3D screen are built in 1024. Color and graphics are not available.

The VIC-20 screen is a 1024x1024. It is high and the program makes the screen smaller in size 1024x1024. A screen which would require too much adjustment and color options. Screen would require 1024x1024. A screen which would require 1024x1024.

Lines 100-140 and 400-410 are the main routines of the VIC-20 Super Expander and lines 100-140 and 400-410 are the main routines of the VIC-20 Super Expander. These lines will be used to draw

This program allows the user to define a 3D shape. Define a cube, cylinder, sphere, etc. and is length and then use the screen as defined in 3D. All of these planes to get a three dimensional representation. It is written for the VIC-20 with Super Expander cartridge.

The plane figure which is to be the cross section of the plane will be defined in terms of x-coordinates. If x=0 to 1023. If y=0 to 1023.

The fact that the screen is not square should be ignored when defining an indicator on a coordinate is made in the program. You may, however, have to rotate (that, during rotation, no coordinates will go beyond the limits of 0-1023. For example,

if the length of the plane is set at 1000 and the x-coordinates of the plane point is 1000 then a 90 degree rotation would move the whole figure of the plane to 1000 — as, off the screen — since the plane point is not visible.

Example to run: The program sets for x and y coordinates in turn after setting the number of points to be defined. Try the following examples:

VIC points	Y-axis
NUMBER OF POINTS: 4	
X 400-1000 300	
Y 400-1000 300	
X 400-1000 300	
Y 400-1000 300	
X 400-1000 300	
Y 400-1000 300	
X 400-1000 300	
Y 400-1000 300	
DEPTH	400
PICTURE POINTS: 1000	1000 1000 1000

You should obtain a square on the screen which can then be turned in any/all of three dimensions to obtain a 3D representation of a cube

## Variables

In all main program lines 100-140, 400-410, 500-540, 600-630. These subroutines are used in two ways: 100-140 and 400-410.

It is the number of points needed and the number of the screen/24 lines.

PICTURE & P3 are the first coordinates of the chosen plane.

PICTURE & P3 are the angles of position in the three planes. X & Y coordinates are used during the manual rotation subroutines.

```

100 100 1000 1000 1000 1000 1000 1000
110 100 1000 1000 1000 1000 1000 1000
120 100 1000 1000 1000 1000 1000 1000
130 100 1000 1000 1000 1000 1000 1000
140 100 1000 1000 1000 1000 1000 1000
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160 100 1000 1000 1000 1000 1000 1000
170 100 1000 1000 1000 1000 1000 1000
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190 100 1000 1000 1000 1000 1000 1000
200 100 1000 1000 1000 1000 1000 1000
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```



"ADVENTURES INTO IMAGINATION"

# URBAN UPSTART

An adventurous escape  
from 20th Century Suburbia  
with over 90 graphic locations.



DEAD END

**CREDIT CARD  
HOTLINE**  
0432 66 638 61  
24 hours

## Your Quest: To escape from Scaurhorpe!

Scaurhorpe is the sort of town where even the dogs carry fake knives! Where there's only one road in and that's a one-way street! The sort of town where rebuilding means a new coat of paint, and where people queue up to queue up for a job! Not many people come to Scaurhorpe, and even fewer leave. The church bells chime them in for morning... the streets are deserted... Now is your chance to escape from Scaurhorpe! 498 Spectre 66.99

# RICHARD SHEPHERD SOFTWARE

ELM HOUSE, 22-25 BLAKHOTT LANE, CIPPERNAIL, SLOUGH, BERKS.

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# Music while you work with the Beeb

Many computer programs can be enhanced by the addition of some music. Some computers, when given a little sound effect, however simple, will sound a lot better in the normal processing of the program.

With the BBC microcomputer a creative sound handling program, however, it is possible to produce sophisticated music, which the computer appears to produce in real time.

It will come that the computer is performing two tasks at the same time. This is normal, of course, as the CPU can only handle one job at any one time.

Nevertheless, it is possible with some careful programming to produce an interaction between the sound processing and the main program processing.

**While Geoff Turner was writing our Rudolph's Nose program — it appeared in the Christmas issue — he developed a method to show graphics and play music simultaneously on the BBC micro. Here he expands on how it's done, with six programs to try**

Program 1 — Shows each cycle of a loop

```
10 REM PROGRAM ONE
20 FOR I=1 TO 15
30   TIME = 0
40   SOUND 1, -15, 500+I*50, 20
50   PRINT "LOOP " I; GOTO 10
60 NEXT I
```

This article is not concerned with the production of sound effects using SOUND and SPEAKER commands, as these have been well documented in other guides. I do hope to show you however how you can use these musical effects to acquire your game or other program.

It is sound channel on the Beeb has a small area of memory allocated to it for use as a storage or buffer area.

When a SOUND command is BASIC, a message is given to the sound effect and the buffer area. The sound is not actually written to the channel but is taken care of by the CPU during interrupt periods when it controls the sound generation stage.

If we try to pass a continuous stream of data into the sound buffer, we may run into problems, as the storage area is very small and can only store data for five notes.

When the five locations full, the BASIC interpreter cannot handle the instruction, and a message is given until space is available in the buffer. The program execution will then slow to a snail's pace for a short time until the sound buffer has been cleared.

To demonstrate how this can

slow effects the running of a program, I have run program 1. This program is a simple loop which prints the time between each cycle of the loop.

You will see that for the first six cycles the time is very short and almost constant. However, as the seventh cycle the time is greatly increased. Because the sound buffer has become full and the program execution is delayed.

You may also notice that the time looks high, as your keyboard is flashing on. This is an indication that a busy or a full program processor has taken.

Obviously this situation is not acceptable, particularly where

speed is an important factor in your game. To improve our program we need to examine the sound buffer to see if there is room for more data.

There are available routines to use a BASIC command. If the buffer is full then we begin the SOUND command and create sound programs.

If you are previously familiar with the BBC computer, it will come as no surprise to you to know that we can access part of the bank of operating system routines to check the sound

buffer to test for space in the buffer.

Unfortunately it is not possible to use RTS (28) from within BASIC because RTS may only be used to send information to the operating system.

If, as in the case, we require information back from the OS then we must use the equivalent OSROUT (29) and from within a machine code program. One's source of how to use the Beeb, as we only need to use a very short routine which can easily be set up using the computer bank's assembler.

Program 2 is the machine code routine. Those of you who are familiar with assembly language may skip this explanation of how it works.

Line 10 is the variable PHON, which performs the assembly code. It should place the machine code routine in memory. Having entered the number of the OSROUT (29) which checks the sound buffer, it also reports any errors.

If you are satisfied that the program works correctly then it can be substituted with OSROUT (29) and other reports of things. Line 30 displays the time to process data leaving the buffer when the routine is running. Line 40 tests the

Program 2 — PHON code to check and update sound buffer

```
10 REM PROGRAM THREE
20 REM PHON CODE
30 DEFPROC PHON
40 CALL LDMR
50 IF 7575 = 0 THEN ENDPROC
60 SOUND 1, volume, pitch, duration
70 ENDPROC
```

buffer status. We can use OSROUT (28) in our pro-

grammer with OSROUT (28) and the OSROUT (28) requires with 250.

There are other routines which are used to the OSROUT (28) routine as follows. Note that the value 250 is relevant to sound buffer number one. A full list of values for other buffers is given on page 428 of the User Guide.

Having completed an assembly routine of the sound buffer, the OSROUT (28) routine returns a value with the Y register. Line 10 returns the value in location 7575. The routine is terminated by the RTS instruction which returns control to BASIC.

When we wish to know the current status of the sound buffer, we can then CALL the machine code, in BASIC and then examine the contents of address

Program 3 — Machine code routine

```
10 REM PROGRAM TWO
20 REM MACHINE CODE ROUTINE
30 FOR I=1 TO 15
40   I = 0
50   OFI = 0
60   OFI = 0
70   LDA #100
80   LDA #100
90   LDA #100
100  LDA #100
110  LDA #100
120  LDA #100
130  LDA #100
```

47% To enable continuous music in our program, we must make regular checks on the buffer status.

The best way to accomplish this would be to write a PROCEDURE to check and update the sound buffer. Program 3 stores a suitable PROCEDURE. Assuming that the machine code has been assembled in an early section of the program then we use GOTO, the routine (from within the PROCEDURE, line 5) sets the collection operator to check the contents of location 47%.

If a value of zero is read then there is no space in the buffer so the PROCEDURE is ended without further action.

If, however, a value greater than zero is read then the space is available and the next note can be added to the buffer at line 40 before the PROCEDURE is terminated.

Program 3—how to use INKEY\$

```
10 REM PROGRAM FIVE
20 REM DEALING WITH INPUT
30
40 PRINT "ENTER NAME"
50 NAME$=""
60 #F15,1
65 REPEAT
75   IF INKEY$=153
85     PROCmusic
95     PRINT 10;
100    NAME$=NAME$+1;
110    UNTIL ASC(10)=13
120 PRINT
130 END
```

eventually empty itself and the music will stop. To get around this problem avoid using INPUT or GET in the program, and use

suitably short so as to prevent gaps occurring in the music. Using this method, the user may clear his name or delete any

other information into the program while the music continues to play.

Finally, Program 4 demonstrates the effect of playing some music while a few graphic routines are executed.

In the demonstration program, three moved characters are used as a temporary check on the status of all three buffers. The machine code routine is therefore executed to maintain the GOTO calls. In PROCmusic it is necessary to make checks on three storage locations at 47%, 471 and 472.

The data for the music consists of pitch and duration values for each note of the melody. These values are read into an array at lines 250 to 260 and are played in a continuous loop.

The graphics routine in program 4 are not sophisticated in any way to the music.

Program 4—how to call PROCmusic

```
10 REM PROGRAM FOUR
20 REM DELAYS AND LOOPS
30
40 REPEAT
50   X=X+1
60   PRINT X
70   PROCmusic
80   UNTIL X=20
90
100 FOR delay =1 TO 10
110   PROCmusic
120   NEXT delay
130
140 PRINT "PRESS SPACE BAR"
150 PROCmusic
160 IF NOT INKEY$=99: THEN 150
```

To ensure a continuous supply of data into the buffer, it is necessary to call PROCmusic at regular intervals. To a certain extent, this is largely a trial and error exercise. Too many calls to PROCmusic will slow down the music program noticeably, while too few calls will result in gaps in the music.

As a general guide, PROCmusic must be called within any type of loop. Some examples are listed in program 4. REPEAT UNTIL, FOR and FOR...NEXT loops in any other kind of delay must always incorporate PROCmusic.

There is one occasion where the continuous flow of music will come to an ending.

When an INPUT or GET statement occurs, program execution is halted until data is entered by the user. At this point it is imperative to call PROCmusic, and the buffer will

alternatively methods to enter information.

By careful use of the INKEY\$ function we can achieve the same result as INPUT whilst at the same time allowing PROCmusic to be called.

Take, for example, the situation where a player's name is entered. This is a suitable requirement in games programs and a useful internally to store part of by an INPUT statement. Program 3 shows how INKEY\$ can be used effectively.

The NAME\$ is usually set to a null string, and then a REPEAT loop is entered to allow players to enter each letter of the name into the INKEY\$. Each letter is added to the NAME\$, UNTIL a RETURN is entered. PROCmusic is called either after every letter is entered or when the final delay in the INKEY\$ function has ended.

The delay in INKEY\$ should be

Program 4—demonstration of combined music and graphics. The tune 'Do-Re-Mi' is played on three channels (melody, piano, guitar and drums) in harmony.

```
10 REM INDIAN MUSIC
20 #F15-4000
30
40 #F15
50 LON 4070
60 LON 4070
70 LON 4070
80 #F15 500
90 LON 4070
100 LON 4070
110 LON 4070
120 LON 4070
130 LON 4070
140 #F15 500
150 #F15
160 #F15
170 #F15
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920 #F15
930 #F15
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1000 #F15
```







# May the Forces be with you

Your country needs you — join the army, the navy or the air force with this action games, rated for you by our reviewers

## Battleships Ti-99/4A £5

Standard Software, 10 Albion Road, Boreham £4.45/4.95

I would think that just about everyone playing this has played Battleships at one time or another.

This computer version has all the ingredients of the great old

but was well programmed using good graphics.

The game can be set up to enable two players to participate or for one player against the computer.

How about your battleships on the board using the direction keys and the spacebar to tell the opponent if the computer places their ships on a square board?

The players show their ships to be seen and destroy other opponent ships.

## Up Periscope Dragon 32 £8.95

Bentley, Computer, 10 Albion Road, Boreham £8.95/9.95

This game is certainly different, and should appeal to those with a liking for the sea and all things naval.

The objective for participants of this, great story of the sea, is to go on, through the enemy sub support and off the edge of the map.

You command either the captain and divers or the enemy, by moving your vessel a step to they do it commands them to clear the line way (if all the evil then are to be followed). The players are not to follow the story as you find, and you have to do this and not anything else, depth changes

and targets to make you to move and change strategy. The story's main aim is to go on to the sea, then the well known battleships take a long time to destroy and looking in 10 to the submarine coordinates they do it very easy.

But it's very playable — especially for those who are not a good player or a player. The problem is to go on and don't come out of the water, and there is even a third option for those who are not a good player in the rules.

There is difficulty in thinking about, but this is a good game for those who are not a good player in the rules.

Reviews: 100%  
Strategy: 100%  
Graphics: 100%  
Value for money: 100%

★★★★★

## UXB Dragon 32 £8.95

Virgin Games, 11-15 Forester Road, London W11

As a target disposal officer, you must always be overlooked from any sort of enemy of this kind of enemy and you.

The main objective of any other kind of enemy, but then the program makes and allows you to be again in the point of view of your enemy. The program is a very good one for those who are not a good player in the rules.

UXB is a very good one for those who are not a good player in the rules. The program is a very good one for those who are not a good player in the rules.

The program is a very good one for those who are not a good player in the rules.

program is a very good one for those who are not a good player in the rules.

There is a very good one for those who are not a good player in the rules.

You will find UXB is a very good one for those who are not a good player in the rules.

It should point to a very good one for those who are not a good player in the rules.

UXB is a very good one for those who are not a good player in the rules.

Reviews: 100%  
Strategy: 100%  
Graphics: 100%  
Value for money: 100%

★★★★★

The player's main aim is to be the first to play a 100 number of cards, and the player's main aim is to be the first to play a 100 number of cards.

Battleships is a very good one for those who are not a good player in the rules.

Reviews: 100%  
Strategy: 100%  
Graphics: 100%  
Value for money: 100%

★★★★★

## Police Patrol COM 64 plus joysticks £8.95

Virgin Games, 11-15 Forester Road, London W11

You are a lone officer with limited time to catch your target. The game is a very good one for those who are not a good player in the rules.

The game is a very good one for those who are not a good player in the rules.

There are two versions of the game, one for those who are not a good player in the rules.

The game is a very good one for those who are not a good player in the rules.

back. When they hit you, there's a very good one for those who are not a good player in the rules.

The game is a very good one for those who are not a good player in the rules.

The game is a very good one for those who are not a good player in the rules.

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The game is a very good one for those who are not a good player in the rules.

The game is a very good one for those who are not a good player in the rules.

## Battle Flight Price 1 £4.95

Virgin Games, 11-15 Forester Road, Boreham

In this Battle of Britain simulation, you are a Spitfire pilot.

The screen display is a very good one for those who are not a good player in the rules.

There is a very good one for those who are not a good player in the rules.

The game is a very good one for those who are not a good player in the rules.

The game is a very good one for those who are not a good player in the rules.

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would be better.

The game is a very good one for those who are not a good player in the rules.

The game is a very good one for those who are not a good player in the rules.

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The game is a very good one for those who are not a good player in the rules.

The game is a very good one for those who are not a good player in the rules.

good value, but you can't play for more than 100.

The game is a very good one for those who are not a good player in the rules.

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The game is a very good one for those who are not a good player in the rules.



RICHARD SHEPHERD SOFTWARE

ELM HOUSE, 23-25 BLANCHETT LANE, CROMHAM, SLINGH, HANTS

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### Trans-Necklam Tower

A game-changer adventure—enter the dungeons, navigate your way through 500 3-D rooms, uncover the secrets, and battle the boss—reach the final boss in the end and tell Court Aeneas, whether the world of the Transformers is real or not.

## Sweet's Case

Locate the secret island hideaway of the mysterious megalomaniac Dr. Death Fries in this action-adventure, through complex puzzles, roller coaster and 3-D music. In fact, he's already a hit with your car. — Dan Snieland — [www.fox.com](http://www.fox.com) (11/10/98)

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

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A game for 1-4 players, with sound and graphics. Make money in business, manage robbery, look from the police, first secret agents, some of whom can be mischievous, otherwise for weapons, food and attack the secret rocket base to finish the battle, and watch the havoc and destruction caused. There's no running back from "RED ALERT". . . . . £5.50

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# Collective efforts of the Salamander Six

As the home computer software market gets steadily darker and more unmerciful, a lot of people in the software business are starting to feel that things can't always stay as they are.

They're not sitting a house dead, which can't be bad. But all too often procrastination is allowed to creep in because of the familiarity and intimacy of the good old holiday days.

Longtime friend Salamander Software, best known for its Dragon adventures such as *Witchlight* and *Yondr's Quest*, is taking a seasonal hiatus—just as the company is run as a side-line, with the six partners each having to spend as little time as possible in it.

Accidental partner, Chris Holland, puts it: "There's no-certain change, because we find we work best this way. We'll sneak up, and we'll sneak out of things. Things in other fields."

"We don't usually employ anybody, unless we need to. People work with such convenience here — no one had a business meeting."

In addition, the Salamander six advance each other from the days they were in *Quest*. Unusually together, and a lot of their Dragon help also comes from old college friends.

But this group of friends is lucky enough to combine out of the world that a computer software company needs.

There's Fox Noble, a Texas, California lawyer in *Play the Hat* (not shown), an excellent memory programmer, and Lucy Parker, who did a course in design. Joel Carson also worked as a graphic designer, and Paul Keweenaw used to be a design engineer. Pete Olsson worked as a business systems programmer.

Chris Holland trained as a teacher and went to drive coaches around Europe. What's that got to do with software? Chris explains: "Like others were looking for someone who was generally intelligent about how to do things, to take over the trial side. And that was me."

Salamander first began selling programs just over a year ago, in September, 1981. It all started because Fox Noble, who had just bought a Dragon, couldn't find any software for it. He decided to write some of his own, along the lines of the role-playing games he'd been playing since he was nine.

*Salamander Software is a small, family-owned company. It has grown from a few people to a team of six. The company is now a successful business.*

The program started to sell well by mail order in November. It was the first real made money from *Quest*, and the *Witchlight* game followed as a result.

Over just a few months, the Salamander team found their own style of work. They had first started with a lot of hard work, then went to work, then went to work.

Everything from the program themselves to the work for the customer and when they were done in time, and the team had to learn everything from scratch. "For example," said Chris, "We didn't understand about advertising copy dates, so the software was out a month too early. Luckily, we're always out on time."

Salamander runs more smoothly now. The partners all have their own areas of responsibility. Fox Noble takes care of marketing and the company account. Paul Keweenaw handles

marketing. Lucy Parker and Joel Carson are the art department. Pete Olsson, who has just joined the company full-time, manages the company's finances. And, Chris Holland deals with sales and the UK and Scandinavia — it's here that sales are made, selling the software into stocking Salamander software.

The company has two or three regular business programmers, but they don't do a lot of good programs since through the year. Before any games are released on the public, however, they are tested in *Quest* the *Play the Hat* — an unemployed student who, Chris says, "has done some good-looking things in games, and has the most elegant bugs."

Salamander specializes in the Dragon mainly because the role machine is started with Chris Holland. He said: "The Dragon does everything completely, and it does some things very well — it runs the software, you can get

some very nice graphics from it, the major limitation is its sound." But he admits that "We were not too far from the Dragon market, where the software may be higher, but the (Dragon) market was much lower. One of the last came in and stood us in reorganizing a computer, we'd probably see, or a computer."

The company has recently started to sell some *Dragon*, *Dragon* and *Dragon* programs, and is now in the process of deciding whether to make supporting a new machine, and if so, when. As well as role playing, Frontier's *Yondr's Quest* and *Chris Parker* make educational and utility programs, a role game made game, including *Dragon* versions of Salamander's *Goldminer* and *Lost Zone*.

Early next year is plans to release *Witchlight*, a multi-episode series game for the Dragon, so complicated that it will need a 30-page manual to explain it.

But Chris says: "We feel that the software market is getting away from us. It must be a good sign. Our design game, *Dragon* 1981, has been a real success. The company earned, and we're still selling 100 to 200 of them a month. Logical games are much larger."

"So in Salamander we're now moving towards good quality graphics and low prices, which you have to say you had first — then move your hand."



Salamander's six partners: from left to right (top), Fox Noble, Pete Olsson, Chris Holland, Joel Carson, Lucy Parker, Paul Keweenaw.

## Maths Invaders 32K BBC or electron £7.95

Paul Williams, 31 Loughfield Ave.,  
Whalley, Lancs BB1 1RS

At last I can have my fellow-  
schoolers in maths (and I don't  
want to know for what, but  
maths is lovely) at a low price.  
Invaders is a far superior method  
to PG 9.

Any guesses for maths, but I  
consider maths is the same as  
anybody else's and the rules are  
irrevocably correct, but the program  
is so slow and boring that it really  
does a better job than PG 9.  
And remember that the  
BBC's — as the problem will be  
even greater on that machine!

The price is not enough to do

and should be used a number of  
times a week, but I'm not sure  
it's worth it.

The slow speed issue (why?)  
does the maths correctly one  
while you (presumably) rate each  
to about three stars.

To do the maths first 'input'  
the program by pressing the numbers  
which form the answer to the  
percentage problem posed on the  
day's computer screen.

It also will now advance that  
day and present the next. The  
first screen will show the class is  
learning on when they learn a  
point, this has poorly taught  
method.

screen mode	50%
screen mode	50%
display	50%
screen mode	50%



## Mr T's Shop Comes 32K BBC £12.95

David Williams, 31 Loughfield Ave.,  
Whalley, Lancs BB1 1RS

This has got to be one of the most  
attractive looking packages of  
software I've seen in a while. The

story line is about a 17-year-old  
colour master, Mr T, who  
works for the bank and the  
company being within — and if  
you'll take me when Mr T  
says it should be.

For despite the simple  
presentation, the program is an  
excellent use of the space and  
time. The story line is very good  
and the first of them called down

## Castle Spelleraus 40K Spectrum £7.95

David Williams, 31 Loughfield Ave.,  
Whalley, Lancs BB1 1RS

The screen display shows a  
picture of a castle. The screen  
will now show a picture of the  
castle and the castle will now  
be built.

This game is one of 30 games  
which will be built in a series of  
the program. The screen will  
show the castle and the castle  
will be built.

Overall, the program is  
excellent. The screen will  
show the castle and the castle  
will be built.

The program is one of 30  
games which will be built in a  
series of the program.

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## Sums Are Fun/ Taking Away For Fun TI-99-4A £5

David Williams, 31 Loughfield Ave.,  
Whalley, Lancs BB1 1RS

This two program set designed  
to get the program to be  
attractive and interesting, but it

screen mode

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screen mode



# Hello, Mr Chips

Will these programs do a good  
job of teaching your child, or is  
it the software companies that  
have something to learn?

Just too few a person made up  
of chips which you have to  
stick with the chips that are  
down the screen. This is done by  
pressing the space bar when they  
are in the screen.

The screen display shows the  
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These screens are just a sample to show the style of the program.

But that's not all, not by a long way. This program automatically raises a corresponding debit or credit for every entry, and will even open a new account if a priority feature is activated. account name.

Information can be manipulated in various ways — you can tell up your bank or credit card account, or analyse expenditure according to a variety of categories which you assign to the transactions. Inward Account balances can be listed at any time. A great time saving feature of this program is that account names and transaction descriptions need only be re-entered once, as all the subsequent withdrawal starting files. There are many, many more features which make this the most powerful finance package around, we even include a test file for you to experiment with before getting started.



## ★ ★ ★ **ADDRESS MANAGER** ★ ★ ★

**ADDRESS MANAGER** uses the same "on the page" presentation as **FINANCE MANAGER** and offers Spectrum owners a professional standard address filing, indexing and retrieval system. Below are examples of the screen presentation.

**ADDRESS MANAGER** has been carefully constructed to provide the user with a tool that is extremely handy and easy to use, the speed and presentation of this program are second to none.

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# Put your foot down... but mind those trees

Although he's not old enough  
for a driving licence, Graham  
Simpson, aged 12, has  
produced a challenging driving  
game for the unexpanded  
TI-99/4A

You'll need all your driving skill  
as my game takes you on a forest  
rally.

Although the program isn't  
just standard TI BASIC, it's a  
challenge to complex the computer.  
How many miles will you com-  
plete before — crash?

Although it has the same  
name, this isn't the French Kelly  
game of an earlier issue.

## How it works

At 1000 ms up time a line  
100-150 ms up characters and  
colours  
100-150 ms up  
100-150 ms up  
100-150 ms up  
100-150 ms up  
100-150 ms up

## Variables

CON stores the current  
value in the form of 100-150  
100-150 ms up  
100-150 ms up  
100-150 ms up  
100-150 ms up  
100-150 ms up

## What is contained

**CALL CHAR** (ASCII code  
number) translates string  
values to parameters to give  
the character with the  
ASCII code value.

**CALL DEHAR** (row number,  
column number, ASCII code  
number) of specified player  
character with ASCII code  
at row and column specified  
and optionally returns it  
translating the number of  
rows used.

**CALL DEHAR** (row number,  
column number, ASCII code  
number) of specified player  
at the same row as CALL  
DEHAR, only returns the  
value.

**CALL DEHAR** (row number,  
column number, ASCII code  
number) of specified player  
at the same row as CALL  
DEHAR, only returns the  
value.

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DEHAR, only returns the  
value.

**CALL DEHAR** (row number,  
column number, ASCII code  
number) of specified player  
at the same row as CALL  
DEHAR, only returns the  
value.

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### DRAGON/TANDY COLOUR PROGRAM

[illegible][illegible]

## Micro Time

**THE**

## Checking out SAVE and OLE

If there is a switch up, which compares the TT's SAVVE and OLD commands. If you're pointing OLD CS1 and then decide to move that machine, you may run up with having running the component old by pressing E. Pressing H will allow you to select the SAVVE mode after exiting an SAVVE CS1. If you press C in either of these modes, you can check a program without having to enter the thermal mode first.

1000









### Top Ten programs for the Dragon

- |    |                 |                 |
|----|-----------------|-----------------|
| 1  | Cashiers' plan  | Microdeal (1)   |
| 2  | Wakabout        | Microdeal (2)   |
| 3  | Propper         | Quicksilver (7) |
| 4  | Merol Out       | Selenaroid 1-3  |
| 5  | Night Flight    | Microdeal (2)   |
| 6  | The King        | Selenaroid 100  |
| 7  | Quicksilver     | Mercon (2)      |
| 8  | Designfly 2     |                 |
| 9  | Map of          | Mercon (1-3)    |
| 10 | Carikens        | Mercon (1-3)    |
| 11 | Talking Android | Microdeal (4)   |
| 12 | Attack          |                 |
| 13 | Cashiers in the | Microdeal 1-3   |
| 14 | Money           |                 |

### Top Ten programs for the VIC-20

- |    |                  |                 |
|----|------------------|-----------------|
| 1  | Archie           | Imagins (2)     |
| 2  | Black's Waters   | Imagins (4)     |
| 3  | Quicksilver      | Lansoft (2)     |
| 4  | Graphic Sketches | Imagins (2)     |
| 5  | Wizard and the   |                 |
| 6  | Pyramid          | M. House 1-3    |
| 7  | Rayhawk          | Quicksilver (2) |
| 8  | Laser Zone       | Lansoft 1-3     |
| 9  | Mercon           |                 |
| 10 | Superstars!      | K. T. 1-3       |
| 11 | Comet Run        | (2) T. 1-3      |
| 12 | Flagship Attack  | Comet           |

Compiled by Webster. Figures in brackets are last week's positions.

### Top Ten programs for the Commodore 64

- |    |                |                  |
|----|----------------|------------------|
| 1  | Propper        | Interceptor (1)  |
| 2  | Crash King     | Interceptor (2)  |
| 3  | Barikens       | Interceptor (3)  |
| 4  | Master Maze    | Aviagame (2)     |
| 5  | Lansoft 64     | Ultramark 1-3    |
| 6  | Purple Turb    | Quicksilver (10) |
| 7  | Attack of the  |                  |
| 8  | Robot Car      | Ultramark 1-3    |
| 9  | Quicksilver    | Quicksilver 1-3  |
| 10 | Mercon         | Ultramark (4)    |
| 11 | Quicksilver 64 | Lansoft (2)      |

Compiled by Webster. Figures in brackets are last week's positions.

### Top Ten programs for the Spectrum

- |    |              |                 |
|----|--------------|-----------------|
| 1  | Art Attack   | Ultramark 1-3   |
| 2  | Lunar Jetman | Ultramark (2)   |
| 3  | Pyramid      | Parity (2)      |
| 4  | Archie       | Imagins 1-3     |
| 5  | Art Attack   | Quicksilver (2) |
| 6  | Art Attack   | M. House 1-3    |
| 7  | Parity       | Mercon (2)      |
| 8  | Dark Case    | CDS (10)        |
| 9  | Propper      | Ultramark (4)   |
| 10 | Art Attack   | Dome 1-3        |
| 11 | Art Attack   |                 |

Compiled by M. M. Smith. Figures in brackets are last week's positions.

## BEST SELLERS

### Top 30

- |    |                |             |              |
|----|----------------|-------------|--------------|
| 1  | Master Maze    | Butt Byt    | Spectrum (2) |
| 2  | The Hobbit     | M. House    | Spectrum (4) |
| 3  | Yakko          | Legend      | Spectrum (1) |
| 4  | Archie         | Ultramark   | Spectrum (4) |
| 5  | Handbook       | Dome        | Spectrum 1-3 |
| 6  | 3D Art Attack  | Quicksilver | Spectrum 1-3 |
| 7  | Kong           | Dome        | Spectrum (2) |
| 8  | Lunar Jetman   | Ultramark   | Spectrum (2) |
| 9  | Zodiac         | Imagins     | Spectrum 1-3 |
| 10 | The Hobbit     | M. House    | CDM 64 1-3   |
| 11 | Handbook       | Dome        | CDM 64 1-3   |
| 12 | Handbook       | Superior    | BBG 1-3      |
| 13 | Feeling Better | Virgin      | CDM 64 1-3   |
| 14 | Handbook       |             |              |
| 15 | Handbook       | Propper     | CDM 64 1-3   |
| 16 | Handbook       | Dome        | Spectrum 1-3 |
| 17 | The King       | Microdeal   | Dragon (2)   |
| 18 | Handbook       |             |              |
| 19 | Art Attack     | Microdeal   | Dragon (2)   |
| 20 | Handbook       | Ultramark   | Spectrum (1) |
| 21 | Handbook       | Archie      | CDM 64 1-3   |
| 22 | Handbook       | Imagins     | VIC 20 1-3   |
| 23 | Handbook       | Archie      | CDM 64 1-3   |
| 24 | Handbook       | Propper     | Spectrum 1-3 |
| 25 | Handbook       | BBG 1-3     | BBG 1-3      |
| 26 | The Hobbit     | M. House    | CDM 64 1-3   |
| 27 | Handbook       | Propper     | Spectrum 1-3 |
| 28 | Handbook       | Ultramark   | Dragon 1-3   |
| 29 | Handbook       | Archie      | Spectrum (2) |
| 30 | Handbook       | Ultramark   | VIC 20 1-3   |

Compiled by PDS Distribution (0254 22121) and distributed by the Computer Trade Association. Chart is for individual or individual outlets in the UK and Northern Ireland for the fortnight ended January 24.

### Top Ten programs for the ZX81

- |    |          |                 |
|----|----------|-----------------|
| 1  | Handbook | Quicksilver (2) |
| 2  | Handbook | Quicksilver (1) |
| 3  | Handbook | Quicksilver (2) |
| 4  | Handbook | Quicksilver (2) |
| 5  | Handbook | Quicksilver (2) |
| 6  | Handbook | Quicksilver (2) |
| 7  | Handbook | Quicksilver (2) |
| 8  | Handbook | Quicksilver (2) |
| 9  | Handbook | Quicksilver (2) |
| 10 | Handbook | Quicksilver (2) |

Compiled by Webster. Figures in brackets are last week's positions.





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